

SEQUENCE LISTING

<110> OLSON, ERIC  
ARAI, AKIKO

<120> STARS - A MUSCLE-SPECIFIC ACTIN-BINDING PROTEIN

<130> MYOG:037US

<140> UNKNOWN  
<141> 2003-08-20

<150> 60/404,706  
<151> 2002-08-20

<160> 15

<170> PatentIn Ver. 2.1

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<222> (1)..(1146)

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Leu Arg Lys Ile Arg Thr Ala Thr Leu Val Ile Ser Leu Ala Arg Gly  
20 25 30

tgg cag cag tgg gcg aat gag aac agc atc agg cag gcc cag gag cct 144  
Trp Gln Gln Trp Ala Asn Glu Asn Ser Ile Arg Gln Ala Gln Glu Pro  
35 40 45

aca ggc tgg ctg ccg gga ggg acc cag gac tca cct caa gct cct aaa 192  
Thr Gly Trp Leu Pro Gly Gly Thr Gln Asp Ser Pro Gln Ala Pro Lys  
50 55 60

cca atc aca ccc cct act tca cac cag aaa gct cag agt gcc cca aag 240  
Pro Ile Thr Pro Pro Thr Ser His Gln Lys Ala Gln Ser Ala Pro Lys  
65 70 75 80

tcg cca ccc cgc ctg cca gaa gga cat gga gat gga caa agc tca gag 288  
Ser Pro Pro Arg Leu Pro Glu Gly His Gly Asp Gly Gln Ser Ser Glu  
85 90 95

aaa gcc cct gag gtt tct cac atc aaa aag aaa gag gtg tcc aaa acg 336  
Lys Ala Pro Glu Val Ser His Ile Lys Lys Lys Glu Val Ser Lys Thr  
100 105 110

|   |     |      |
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| gtg gtc agc aag act tac gag aga gga ggg gac gtg agc cac ctc agc     |     | 384  |
| Val Val Ser Lys Thr Tyr Glu Arg Gly Gly Asp Val Ser His Leu Ser     |     |      |
| 115   | 120 | 125  |
| <br>cac agg tac gag agg gat gct ggt gtg ctt gaa cct ggg cag cca gag |     | 432  |
| His Arg Tyr Glu Arg Asp Ala Gly Val Leu Glu Pro Gly Gln Pro Glu     |     |      |
| 130   | 135 | 140  |
| <br>aat gac att gac aga atc ctc cac agc cac ggc tcc cca acg cg agg  |     | 480  |
| Asn Asp Ile Asp Arg Ile Leu His Ser His Gly Ser Pro Thr Arg Arg     |     |      |
| 145   | 150 | 155  |
| <br>aga aaa tgt gcc aac ctg gtg tct gag cta acc aag ggc tgg aga gtg |     | 528  |
| Arg Lys Cys Ala Asn Leu Val Ser Glu Leu Thr Lys Gly Trp Arg Val     |     |      |
| 165   | 170 | 175  |
| <br>atg gag cag gag gag ccc aca tgg agg agt gac agc gta gac aca gag |     | 576  |
| Met Glu Gln Glu Glu Pro Thr Trp Arg Ser Asp Ser Val Asp Thr Glu     |     |      |
| 180   | 185 | 190  |
| <br>gac agc ggc tat gga gga gag gct gag gag agg ccc gag cag gat gga |     | 624  |
| Asp Ser Gly Tyr Gly Glu Ala Glu Glu Arg Pro Glu Gln Asp Gly         |     |      |
| 195   | 200 | 205  |
| <br>gtg cag gtg gct gtg gtc agg atc aag cgc ccc ttg ccc tcc cag gta |     | 672  |
| Val Gln Val Ala Val Val Arg Ile Lys Arg Pro Leu Pro Ser Gln Val     |     |      |
| 210   | 215 | 220  |
| <br>aac aga ttt aca gag aaa ctc aac tgc aaa gcc caa cag aaa tat agc |     | 720  |
| Asn Arg Phe Thr Glu Lys Leu Asn Cys Lys Ala Gln Gln Lys Tyr Ser     |     |      |
| 225   | 230 | 235  |
| <br>cca gtg ggc aac ttg aaa ggg aga tgg cag cag tgg gct gat gaa cac |     | 768  |
| Pro Val Gly Asn Leu Lys Gly Arg Trp Gln Gln Trp Ala Asp Glu His     |     |      |
| 245   | 250 | 255  |
| <br>ata caa tcc cag aag ctc aat cct ttc agt gaa gag ttt gat tac gag |     | 816  |
| Ile Gln Ser Gln Lys Leu Asn Pro Phe Ser Glu Glu Phe Asp Tyr Glu     |     |      |
| 260   | 265 | 270  |
| <br>ctg gcc atg tcc acc cgc cta cac aaa gga gat gag ggc tat ggc cgc |     | 864  |
| Leu Ala Met Ser Thr Arg Leu His Lys Gly Asp Glu Gly Tyr Gly Arg     |     |      |
| 275   | 280 | 285  |
| <br>ccc aaa gaa gga acc aaa act gct gaa agg gcc aag cgt gct gag gag |     | 912  |
| Pro Lys Glu Gly Thr Lys Thr Ala Glu Arg Ala Lys Arg Ala Glu Glu     |     |      |
| 290   | 295 | 300  |
| <br>cac atc tac agg gaa atg gac atg tgc ttc att atc tgc aca atg     |     | 960  |
| His Ile Tyr Arg Glu Met Met Asp Met Cys Phe Ile Ile Cys Thr Met     |     |      |
| 305   | 310 | 315  |
| <br>gct cgc cac aga cga gat ggc aag atc cag gtt act ttt gga gat ctc |     | 1008 |
| Ala Arg His Arg Asp Gly Lys Ile Gln Val Thr Phe Gly Asp Leu         |     |      |
| 325   | 330 | 335  |
| <br>ttt gac aga tac gtt cgt att tca gat aaa gta gtg ggc att ctc atg |     | 1056 |

Phe Asp Arg Tyr Val Arg Ile Ser Asp Lys Val Val Gly Ile Leu Met  
 340 345 350  
 cgt gcc agg aaa cat gga ctg gta gac ttt gaa gga gag atg cta tgg 1104  
 Arg Ala Arg Lys His Gly Leu Val Asp Phe Glu Gly Glu Met Leu Trp  
 355 360 365  
 caa ggc cga gat gac cat gtt gtg att acg cta ctc aag tga 1146  
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 35 40 45  
 Thr Gly Trp Leu Pro Gly Gly Thr Gln Asp Ser Pro Gln Ala Pro Lys  
 50 55 60  
 Pro Ile Thr Pro Pro Thr Ser His Gln Lys Ala Gln Ser Ala Pro Lys  
 65 70 75 80  
 Ser Pro Pro Arg Leu Pro Glu Gly His Gly Asp Gly Gln Ser Ser Glu  
 85 90 95  
 Lys Ala Pro Glu Val Ser His Ile Lys Lys Lys Glu Val Ser Lys Thr  
 100 105 110  
 Val Val Ser Lys Thr Tyr Glu Arg Gly Gly Asp Val Ser His Leu Ser  
 115 120 125  
 His Arg Tyr Glu Arg Asp Ala Gly Val Leu Glu Pro Gly Gln Pro Glu  
 130 135 140  
 Asn Asp Ile Asp Arg Ile Leu His Ser His Gly Ser Pro Thr Arg Arg  
 145 150 155 160  
 Arg Lys Cys Ala Asn Leu Val Ser Glu Leu Thr Lys Gly Trp Arg Val  
 165 170 175  
 Met Glu Gln Glu Glu Pro Thr Trp Arg Ser Asp Ser Val Asp Thr Glu  
 180 185 190  
 Asp Ser Gly Tyr Gly Glu Ala Glu Glu Arg Pro Glu Gln Asp Gly  
 195 200 205  
 Val Gln Val Ala Val Val Arg Ile Lys Arg Pro Leu Pro Ser Gln Val  
 210 215 220  
 Asn Arg Phe Thr Glu Lys Leu Asn Cys Lys Ala Gln Gln Lys Tyr Ser  
 225 230 235 240  
 Pro Val Gly Asn Leu Lys Gly Arg Trp Gln Gln Trp Ala Asp Glu His  
 245 250 255  
 Ile Gln Ser Gln Lys Leu Asn Pro Phe Ser Glu Glu Phe Asp Tyr Glu  
 260 265 270  
 Leu Ala Met Ser Thr Arg Leu His Lys Gly Asp Glu Gly Tyr Gly Arg  
 275 280 285  
 Pro Lys Glu Gly Thr Lys Thr Ala Glu Arg Ala Lys Arg Ala Glu Glu  
 290 295 300  
 His Ile Tyr Arg Glu Met Met Asp Met Cys Phe Ile Ile Cys Thr Met

|   |     |     |     |
|---|-----|-----|-----|
| 305   | 310 | 315 | 320 |
| Ala Arg His Arg Arg Asp Gly Lys Ile Gln Val Thr Phe Gly Asp Leu |     |     |     |
| 325   | 330 | 335 |     |
| Phe Asp Arg Tyr Val Arg Ile Ser Asp Lys Val Val Gly Ile Leu Met |     |     |     |
| 340   | 345 | 350 |     |
| Arg Ala Arg Lys His Gly Leu Val Asp Phe Glu Gly Glu Met Leu Trp |     |     |     |
| 355   | 360 | 365 |     |
| Gln Gly Arg Asp Asp His Val Val Ile Thr Leu Leu Lys             |     |     |     |
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Leu Arg Lys Val Arg Thr Ala Thr Leu Val Ile Asn Leu Ala Arg Gly  
20 25 30

tgg cag cag tgg gcg aat gag aac agt acc aaa cag gcc cag gag cct 144  
Trp Gln Gln Trp Ala Asn Glu Asn Ser Thr Lys Gln Ala Gln Glu Pro  
35 40 45

gca ggc tgg ctg ccg gga gca act cat gac gta cct aac gct cct aaa 192  
Ala Gly Trp Leu Pro Gly Ala Thr His Asp Val Pro Asn Ala Pro Lys  
50 55 60

gaa gcc ggt cct tac cag cat gcc ccc aaa act ctg tct cca aag cca 240  
Glu Ala Gly Pro Tyr Gln His Ala Pro Lys Thr Leu Ser Pro Lys Pro  
65 70 75 80

gat cga gac gga gag gga caa cac tca gaa gaa gcc acc gag gtc tcc 288  
Asp Arg Asp Gly Glu Gly Gln His Ser Glu Ala Thr Glu Val Ser  
85 90 95

cac att aaa agg aaa gag gtg acc aga acg gtt gtc agc aag gct tat 336  
His Ile Lys Arg Lys Glu Val Thr Arg Thr Val Val Ser Lys Ala Tyr  
100 105 110

gag agg gga gga gat gtg aac tac ctg agc cac agg tat gag aat gat 384  
Glu Arg Gly Gly Asp Val Asn Tyr Leu Ser His Arg Tyr Glu Asn Asp  
115 120 125

ggt ggc gtg tct gaa gct att cag cca gag aat gac att gac aga atc 432  
Gly Gly Val Ser Glu Ala Ile Gln Pro Glu Asn Asp Ile Asp Arg Ile  
130 135 140

|   |     |      |
|---|-----|------|
| ctt ctt agt cac gac tcg cca aca cg <sup>g</sup> aga aaa tgc acc aac ctg     |     | 480  |
| Leu Leu Ser His Asp Ser Pro Thr Arg Arg Arg Lys Cys Thr Asn Leu             |     |      |
| 145   | 150 | 155  |
|   |     | 160  |
| gtg tct gag ctg acc aaa ggc tgg aaa gtg atg gaa cag gaa gag ccc             |     | 528  |
| Val Ser Glu Leu Thr Lys Gly Trp Lys Val Met Glu Gln Glu Glu Pro             |     |      |
| 165   | 170 | 175  |
| acg tgg aag agt gac agc gta gac aca gag gac agt ggc tac gga ggg             |     | 576  |
| Thr Trp Lys Ser Asp Ser Val Asp Thr Glu Asp Ser Gly Tyr Gly Gly             |     |      |
| 180   | 185 | 190  |
| gat atg gag gag agg cct gag caa gat gca gcg cct gtg gct cct gcc             |     | 624  |
| Asp Met Glu Glu Arg Pro Glu Gln Asp Ala Ala Pro Val Ala Pro Ala             |     |      |
| 195   | 200 | 205  |
| agg atc aaa cgc ccc ttg cac tcc cag gca aac agg tac tct gag cca             |     | 672  |
| Arg Ile Lys Arg Pro Leu His Ser Gln Ala Asn Arg Tyr Ser Glu Pro             |     |      |
| 210   | 215 | 220  |
| ctc aac tgt aag gcc cat cg <sup>g</sup> aaa tac agc caa gtg gac aac ttg aaa |     | 720  |
| Leu Asn Cys Lys Ala His Arg Lys Tyr Ser Gln Val Asp Asn Leu Lys             |     |      |
| 225   | 230 | 235  |
|   |     | 240  |
| ggg agg tgg cag cag tgg gcc gat gaa cac gtc cag tcc cag aag ctc             |     | 768  |
| Gly Arg Trp Gln Gln Trp Ala Asp Glu His Val Gln Ser Gln Lys Leu             |     |      |
| 245   | 250 | 255  |
| aat ccc ttc agt gac gaa ttt gac tat gac cta gcc atg tcc act cgg             |     | 816  |
| Asn Pro Phe Ser Asp Glu Phe Asp Tyr Asp Leu Ala Met Ser Thr Arg             |     |      |
| 260   | 265 | 270  |
| ctc cac aag gga gac gag ggc tat ggc cgc ccc aaa gag gga agc aag             |     | 864  |
| Leu His Lys Gly Asp Glu Gly Tyr Arg Pro Lys Glu Gly Ser Lys                 |     |      |
| 275   | 280 | 285  |
| aca gct gaa agg gcc aag cga gcg gaa gag cac atc tat cgg gaa att             |     | 912  |
| Thr Ala Glu Arg Ala Lys Arg Ala Glu Glu His Ile Tyr Arg Glu Ile             |     |      |
| 290   | 295 | 300  |
| atg gaa ctg tgc ttt gtt atc cgc aca atg gct cgc cac aga cga gat             |     | 960  |
| Met Glu Leu Cys Phe Val Ile Arg Thr Met Ala Arg His Arg Arg Asp             |     |      |
| 305   | 310 | 315  |
|   |     | 320  |
| ggc aag atc cag gtt act ttc gga gaa ctc ttt gat cgc tat gtt cgc             |     | 1008 |
| Gly Lys Ile Gln Val Thr Phe Gly Glu Leu Phe Asp Arg Tyr Val Arg             |     |      |
| 325   | 330 | 335  |
| att tct gat aaa gtc gtg ggc atc ctc atg cgt gcc agg aaa cac gga             |     | 1056 |
| Ile Ser Asp Lys Val Val Gly Ile Leu Met Arg Ala Arg Lys His Gly             |     |      |
| 340   | 345 | 350  |
| ctg gtg cac ttt gaa gga gag atg cta tgg caa ggc cga gac gac cat             |     | 1104 |
| Leu Val His Phe Glu Gly Glu Met Leu Trp Gln Gly Arg Asp Asp His             |     |      |
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1128

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35 40 45  
Ala Gly Trp Leu Pro Gly Ala Thr His Asp Val Pro Asn Ala Pro Lys  
50 55 60  
Glu Ala Gly Pro Tyr Gln His Ala Pro Lys Thr Leu Ser Pro Lys Pro  
65 70 75 80  
Asp Arg Asp Gly Glu Gly Gln His Ser Glu Glu Ala Thr Glu Val Ser  
85 90 95  
His Ile Lys Arg Lys Glu Val Thr Arg Thr Val Val Ser Lys Ala Tyr  
100 105 110  
Glu Arg Gly Asp Val Asn Tyr Leu Ser His Arg Tyr Glu Asn Asp  
115 120 125  
Gly Val Ser Glu Ala Ile Gln Pro Glu Asn Asp Ile Asp Arg Ile  
130 135 140  
Leu Leu Ser His Asp Ser Pro Thr Arg Arg Lys Cys Thr Asn Leu  
145 150 155 160  
Val Ser Glu Leu Thr Lys Gly Trp Lys Val Met Glu Gln Glu Glu Pro  
165 170 175  
Thr Trp Lys Ser Asp Ser Val Asp Thr Glu Asp Ser Gly Tyr Gly Gly  
180 185 190  
Asp Met Glu Glu Arg Pro Glu Gln Asp Ala Ala Pro Val Ala Pro Ala  
195 200 205  
Arg Ile Lys Arg Pro Leu His Ser Gln Ala Asn Arg Tyr Ser Glu Pro  
210 215 220  
Leu Asn Cys Lys Ala His Arg Lys Tyr Ser Gln Val Asp Asn Leu Lys  
225 230 235 240  
Gly Arg Trp Gln Gln Trp Ala Asp Glu His Val Gln Ser Gln Lys Leu  
245 250 255  
Asn Pro Phe Ser Asp Glu Phe Asp Tyr Asp Leu Ala Met Ser Thr Arg  
260 265 270  
Leu His Lys Gly Asp Glu Gly Tyr Gly Arg Pro Lys Glu Gly Ser Lys  
275 280 285  
Thr Ala Glu Arg Ala Lys Arg Ala Glu Glu His Ile Tyr Arg Glu Ile  
290 295 300  
Met Glu Leu Cys Phe Val Ile Arg Thr Met Ala Arg His Arg Arg Asp  
305 310 315 320  
Gly Lys Ile Gln Val Thr Phe Gly Glu Leu Phe Asp Arg Tyr Val Arg  
325 330 335  
Ile Ser Asp Lys Val Val Gly Ile Leu Met Arg Ala Arg Lys His Gly  
340 345 350  
Leu Val His Phe Glu Gly Glu Met Leu Trp Gln Gly Arg Asp Asp His  
355 360 365

Val Val Ile Thr Leu Val Glu  
370 375

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aatttcctag gaaatgaatc tcctactagg agacgctact gtggggggaa agcaggact 180  
tttggtaaag caatcgacg gaaagaggga aagtgcgtgg gatcgcaag tagcagttg 240  
gatgctgatg acagcggctc tggggaggaa gcatactctga gcgacaacag cgatctgaac 300  
gagaacgaac ccaagaaaca tgtcaacaga cacaagatta aagtgcacaac gatgggtgac 360  
ctgcggagcc gctggcagcg tttcgctgaa gatcacatgg agggccagaa gctcaaccct 420  
ttcagtgaag agtttgacta tgatcatgca atggccactc gactccaccaa aggccgacgcg 480  
ggctacggac gacccanaga aggatccaaa acagctcagc gagcagatcg agccaaaaag 540  
cacatctacc gcgagatgga ggagatgtgc ttcatcatac gagacatggg ccagcaggac 600  
aacacaggcc aa 612

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20 25 30

Gln Leu Thr Thr Glu Asp Thr Lys Asn Phe Leu Gly Asn Glu Ser Pro  
35 40 45

Thr Arg Arg Arg Tyr Cys Gly Gly Lys Ala Gly Thr Phe Val Lys Ala  
50 55 60

Ile Gly Arg Lys Glu Gly Lys Ser Met Gly Ser Arg Ser Ser Ser Leu  
65 70 75 80

Asp Ala Asp Asp Ser Gly Leu Gly Glu Glu Ala Ser Leu Ser Asp Asn  
85 90 95

Ser Asp Leu Asn Glu Asn Glu Pro Lys Lys His Val Asn Arg His Lys  
100 105 110

Ile Lys Val Thr Thr Met Gly Asp Leu Arg Ser Arg Trp Gln Arg Phe  
115 120 125

Ala Glu Asp His Met Glu Gly Gln Lys Leu Asn Pro Phe Ser Glu Glu  
130 135 140

Phe Asp Tyr Asp His Ala Met Ala Thr Arg Leu His Lys Gly Asp Ala  
145 150 155 160

Gly Tyr Gly Arg Pro Lys Lys Asp Pro Lys Gln Leu Ser Glu Gln Ile  
165 170 175

Glu Pro Lys Ser Thr Ser Thr Ala Arg Trp Arg Arg Cys Ala Ser Ser  
180 185 190

Tyr Glu Thr Trp Ala Ser Arg Thr Asn Arg Ala  
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<213> Caenorhabditis elegans

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1 5 10 15

gaa atg gag cag aat gta gcg act cag agc aaa gat gat gtg tat tcc 96  
Glu Met Glu Gln Asn Val Ala Thr Gln Ser Lys Asp Asp Val Tyr Ser  
20 25 30

aaa gat ttt act caa aag aaa atg gac aag tcc agt agc gaa tat gga 144  
Lys Asp Phe Thr Gln Lys Lys Met Asp Lys Ser Ser Ser Glu Tyr Gly  
35 40 45

cgg cca aaa cca gga act ctt aca gag caa aga gct aaa aaa gct gcc 192  
Arg Pro Lys Pro Gly Thr Leu Thr Glu Gln Arg Ala Lys Lys Ala Ala  
50 55 60

gcc cac gtt cac aga gaa atg cta aca tta tgt gaa gtt gtg gag gat 240  
Ala His Val His Arg Glu Met Leu Thr Leu Cys Glu Val Val Glu Asp  
65 70 75 80

tat ggt aaa caa gag aag gaa gat cca atc aga atc aca ttt gga 288  
Tyr Gly Lys Gln Glu Lys Gly Asp Pro Ile Arg Ile Thr Phe Gly  
85 90 95

aga ctt ttc aca att tat gtc aat att tct gat aag gta gtt gga acc 336  
Arg Leu Phe Thr Ile Tyr Val Asn Ile Ser Asp Lys Val Val Gly Thr  
100 105 110

ctt ttg cga gct cgt aaa cac aaa atg ata gat ttt gaa gga gaa atg 384  
Leu Leu Arg Ala Arg Lys His Lys Met Ile Asp Phe Glu Gly Glu Met  
115 120 125

tta ttt caa aag aga gat gat cat gtt att atc aca ctt tta ctc tct 432  
Leu Phe Gln Lys Arg Asp Asp His Val Ile Ile Thr Leu Leu Ser

130

135

140

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gga gca cag ctt aaa gag gct att cga gca cac gca gca gca aac cca 480
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Lys Glu 489

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Lys Asp Phe Thr Gln Lys Lys Met Asp Lys Ser Ser Ser Glu Tyr Gly
      35          40          45
Arg Pro Lys Pro Gly Thr Leu Thr Glu Gln Arg Ala Lys Lys Ala Ala
      50          55          60
Ala His Val His Arg Glu Met Leu Thr Leu Cys Glu Val Val Glu Asp
      65          70          75          80
Tyr Gly Lys Gln Glu Lys Glu Gly Asp Pro Ile Arg Ile Thr Phe Gly
      85          90          95
Arg Leu Phe Thr Ile Tyr Val Asn Ile Ser Asp Lys Val Val Gly Thr
      100         105         110
Leu Leu Arg Ala Arg Lys His Lys Met Ile Asp Phe Glu Gly Glu Met
      115         120         125
Leu Phe Gln Lys Arg Asp Asp His Val Ile Ile Thr Leu Leu Leu Ser
      130         135         140
Gly Ala Gln Leu Lys Glu Ala Ile Arg Ala His Ala Ala Ala Asn Pro
      145         150         155         160
Lys Glu

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<213> Drosophila melanogaster
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           35                  40                           45

Gln Asp Gly Arg Ala Ala Ser Pro Lys Pro Thr Phe Ser Lys Asp Gln  
 50 55 60

Tyr Gly Lys Pro Leu Ala Gly Ser Leu Thr Glu Met Arg Gly Gln Lys  
65 70 75 80

Ala Asn Ile His Val Met Lys Glu Met Leu Glu Leu Cys Gln Ile Ile  
85 90 95

Asn Ser Glu Gly Tyr Asp Val Lys Asp Glu Pro Thr Met Arg Val Ile  
100 105 110

Pro Phe Gly Glu Leu Phe Asn Val Ser Val Leu Phe Thr Ala Gly Ile  
115 120 125

Phe Phe Glu Lys Pro Ser Lys Leu Val Thr Ser Thr Leu Gln Ile Tyr  
130 135 140

Asn Tyr Ile Ser Asp Lys Val Val Gly Ile Leu Leu Arg Ala Arg Lys  
145 150 155 160

His Lys Leu Val Asp Phe Glu Gly Glu Met Leu Tyr Gln Arg Arg Asp  
165 170 175

Asp Asp Val Pro Val Phe Leu Leu Lys Pro Ile Lys Glu Ile Arg Ser  
180 185 190

Glu Met Glu Ala Lys Ile Glu Asp Ile Lys Arg Ala Ala Ser Pro Ala  
195 200 205

Pro Pro Gln Ser Thr Ser Val Leu Met Asp Arg Ser Ala His Glu Gln  
210 215 220

Lys Leu Lys Ser Arg Thr Pro Ser Pro Ala Val Gly Lys Ser Ala Lys  
225 230 235 240

Ser Lys Ser Ala Ser Pro Ala Pro Lys Ala Pro Val Pro Val Pro Ala  
245 250 255

Pro Ala Ala Glu Val Thr Pro Val Ala Gly Pro Thr Thr Ser Ala Glu  
260 265 270

Pro Ala Pro Val Ala Glu Ser Thr Met Ala Ala Val Pro Ala Pro Ser  
275 280 285

Thr Glu Pro Thr Pro Ala Thr Ala Pro Ala Ser Ser Thr Val Glu Ile  
290 295 300

Glu Pro Ala Lys Pro Glu Val Thr Glu Gln Ala Pro Val Ala Val Ile  
305 310 315 320

Val Thr Glu Ala Pro Ser Thr Glu Glu Thr Thr Pro Thr Thr Ser Glu  
325 330 335

Pro Gln Ala Glu Glu Ala Pro Ala Ala Val Ala Pro Ala Gly Pro Ala  
340 345 350

Asp Asp Leu Pro Thr Ile Val Ile Glu Ala Thr Ala Glu Phe Val Arg  
355 360 365

Thr Val Ser Val Glu Gln Leu Ala Pro Ser Pro Gly Thr Ala Ser Glu  
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Primer

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Primer

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Primer

<400> 14  
gatcttcca tcg

13

<210> 15  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
Primer

<400> 15  
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24